National Aeronautics and Space Administration

Roundup

Lyndon B. Johnson Space Center

January | 2011

Reflections 2010

JSC Director

On the cover:

Reflections 2010.

NASA/PHOTO TONY GRAY AND KEVIN O'CONNELL

Photo of the month:

SpaceX's Falcon 9 rocket and Dragon spacecraft lift off from Launch Complex 40 at Cape Canaveral at 9:43 a.m. CST on Dec. 8. This is the first demonstration flight for NASA's Commercial Orbital Transportation Services program.

NASA/PHOTO

I want to express my gratitude and appreciation for a tremendously successful year at Johnson Space Center. Together, the JSC team provided exceptional engineering, safety, extravehicular activity, science, mission operations and institutional support for: four space shuttle missions (STS-130, 131, 132 and 133), five International Space Station expeditions (Expeditions 22, 23, 24, 25 and 26), numerous shuttle and station spacewalks, Constellation's Preliminary Design Review, Orion's Pad Abort 1 test flight and completion of the Orion Crew Module Ground Test Article—all significant milestones for the three human spaceflight programs. And, the recent success of SpaceX's first demonstration flight test as part of the Commercial Crew and Cargo Program bodes well for eventual commercial cargo services in support of the space station. Congratulations on jobs well done!

One especially unique accomplishment that JSC team members assisted with was the successful rescue of 33 trapped miners in Chile. At the request of the Chilean Minister of Health, we were asked to share our expertise in nutrition and behavioral health. In addition, NASA provided engineering suggestions regarding the specially designed rescue cage that was used to pull the miners to safety.

I couldn't be more proud of this effort and accomplishment.

All of these successes came amidst great change for our agency and our center. Our team of space professionals has performed at the usual high level of expertise under difficult circumstances. We began the year with three large human spaceflight programs, knowing we would soon begin to bring the Space Shuttle Program to an end. When the president's proposed 2011 budget was released on the first of February, we learned we would be losing the Constellation Program as well. Because Congress had reservations about several aspects of the president's proposed budget, they eventually passed—and the president signed—a 2011 NASA Authorization Bill, which provides a more definitive direction for NASA. As I write this, we wait for Congress to pass the Appropriations Bill to fund the authorized activities for 2011. It has been very difficult for all of us to lose many members of our experienced and talented JSC team this year.

As usual, our team pulled together to provide support in every way possible. One of our key partners, Workforce Solutions, works with us to provide just-in-time resources to employees who are impacted. Working closely in these efforts is the Human Resources (HR) community, chaired by JSC's HR director and the Joint Leadership Team, which includes the leaders of our contractor partners. Together, we are keeping a pulse on the needs of our employees and implementation of workforce initiatives.

We contributed to the new directions and emphasis within NASA this year by supporting follow-on commercial crew development efforts, joining the expertise shared by Kennedy Space Center and JSC to further commercial capabilities in human-rated design and flight crew safety, coupled with extensive planning associated with the proposed Flagship Technology Demonstration Program and expanded technology development initiatives. Our Orion Project team, in addition to the highly successful milestones mentioned earlier, has spent time restructuring its mission milestones and budget outlook to more effectively align with the direction NASA would like to take with the multi-purpose crew vehicle. JSC Engineering and other institutional organizations are working closely with Orion to incorporate changes in the government oversight model and investigate opportunities to use in-house expertise more effectively—for example, to advance the environmental control and life support area.

We have also worked hard this year to enhance our relationships both within and beyond the aerospace community. With American Institute of Aeronautics and Astronautics sponsorship, we conducted the Commercial Human Space Symposium in October to cultivate relationships and partnership opportunities with organizations interested in commercial crew transportation. In September, we joined forces with the Greater Houston Partnership and others to conduct the Innovation and Successful Partnership Summit to discuss our unique skills and technologies with major industries in Houston and identify future collaboration opportunities. On a similar vein, the NASA Human Health and Performance Center was established in October through the leadership of Dr. Jeff Davis and our Space Life Sciences group. The main goal is to integrate human health and performance efforts across NASA and with other government agencies, universities and corporations to achieve advances in human system research and technology in a shorter time period and for less cost.

Our continued focus on innovation and collaboration was also evident in a number of center activities and events throughout the year: bar camps and rap forums, the innovation speaker series, the opening of the Collaboration Center in Building 3, the innovation charge code to test out new ideas and our Innovation 2010 fair. Several of our technology development programs used fresh collaborations with industry to make exciting progress—including Robonaut 2 (R2). R2 has been packed away in *Discovery*, awaiting a launch to station early in 2011. The programs also yielded advances in liquid oxygen/methane engines for potential use in future exploration missions.

I'm encouraged that people across the center are energized to relook at how we do business, both in terms of incorporating new technology and new processes, and I'm confident 2011 will bring continued outstanding accomplishments from our great team here in Houston. Please keep our team members who are deployed around the world supporting NASA missions, including our crew members aboard the station, in your thoughts during this new year.

Transition

Only two missions remain on the manifest before the end of the Space Shuttle Program (SSP) and its era of human spaceflight: STS-133 and STS-134. While there has been discussion of adding another mission, STS-135, no official word has been issued on that possibility.

In the meantime, the SSP welcomed employees and the public to be a part of the last missions in some unique and memorable ways.

One approach was through the SSP Commemorative Patch Contest, where shuttle team members were given the chance to design a piece of the spaceship's special legacy: the commemorative end-of-program patch. The People's Choice winner, Blake Dumesnil of Hamilton Sundstrand, was overwhelmed by the outpouring of support he received for his patch design.

"All of the positive feedback and words of appreciation I have received over the course of this contest made me realize how much this program means to everyone," Dumesnil said. "This has been an unimaginable honor for me."

Also, every shuttle fan on the planet was invited to get their "Face in Space" by uploading their portrait to fly with the astronauts aboard *Discovery* and *Endeavour* for STS-133 and STS-134, respectively.

Those who are more musically inclined were invited to participate in a "Wakeup Song Contest." The STS-133 top two vote-getters were picked from a list of top 40 previously played wakeup songs. (Winners to be announced during the missions.) For STS-134, NASA asked the public to contribute original tunes for consideration.

If books are more your thing, "Wings In Orbit," an authoritative documentation of the many accomplishments of the SSP, will be released this March.

In this edition …

Bittersweet

On July 8, 2010, at NASA's Michoud Assembly Facility in New Orleans, NASA and Lockheed Martin Space Systems Company paid tribute to the workforce who built the external tanks for the space shuttle fleet. The employees persevered through the challenges of Return to Flight and Hurricane Katrina to build a series of tanks that have provided increasingly safer launches of shuttles.

Hundreds gathered to witness ET-138, the last newly manufactured tank, roll out of the assembly building and make its way to the Michoud Harbor.

Transition resources at your fingertips

Contractors who have experienced job loss or may face one with the end of the Space Shuttle Program are also encouraged to make use of the **Workforce Solutions Aerospace Transition Center.**

Workforce Solutions Aerospace Transition Center
16921 El Camino Real (by HEB) Houston, TX 77058
281-956-5678

The Aerospace Transition Center offers free, individualized career counseling and transition support services to the aerospace community, as well as job readiness and rebranding skills, résumé assistance and interviewing practice, networking, computers, Internet, fax, copiers, phones, seminars, Webinars, workshops and more.

You can also join Workforce Solutions on LinkedIn:
http://www.linkedin.com/groups?homeNewMember=&gid=3175557&trk

The Johnson Space Center Employee Assistance Program provides services for employees, contractors and dependents experiencing emotional health disorders; family/relationship problems; financial/legal concerns; alcohol/drug abuse; grief and loss; and stress management. Call the office directly at 281-483-6130 for additional information.

Exploration Systems

NASA is building on the progress of the Constellation Program and making recommendations for the transition of Constellation, Orion, Mission Operations and Extravehicular Activity related assets to facilitate the Multipurpose Crew Vehicle efforts as called for in the 2010 NASA Authorization Act. The multicenter collaborative work demonstrated by the Constellation Program are expected to be retained as part of any new program effort.

NASA/PHOTO JSC2010-E-173392

The crew module Ground Test Article gets outfitted with parachutes. The vehicle will be used for testing to correlate models and refine environments for component design, qualification, test and flight.

NASA's Exploration Systems Mission Directorate (ESMD) recently signed memos that established formal planning teams for the Multipurpose Crew Vehicle at Johnson Space Center and the Space Launch System at Marshall Space Flight Center (MSFC). ESMD Associate Administrator Doug Cooke signed two memos to the center directors at JSC and MSFC to take steps to establish formal planning teams for the eventual programs. While planning has already been under way for transition from the Constellation Program, this recent direction will make the planning a formal process. This direction does not authorize new hiring, permanent reassignment, the establishment of new program offices or the award of contracts at this time. The centers would await the authority to proceed, at which time formal program offices would be established and permanent program managers assigned.

Orion milestones completed in 2010:

- In February, the Lockheed Martin Orion team achieved a major technology milestone by completing fabrication of the world's largest heat shield structure.
- NASA and Lockheed Martin completed the first flight test of the Orion launch abort system on May 6, 2010. This successful flight test demonstrated the flawless performance of the launch abort system and provided validation of the greatly improved crew safety capabilities of the new spacecraft design.
- The NASA/Lockheed Orion team successfully completed the Phase 1 Safety Review of NASA's Human Rating Requirements for missions in low-Earth orbit, as well as sortie missions to the moon.
- In July, Ball Aerospace and Technologies Corp., Lockheed Martin and NASA conducted a successful technology demonstration of an inventive navigation system that will make docking operations safer and easier for spacecraft flying to the International Space Station.
- The Orion crew module Ground Test Article successfully passed a structural proof pressure test at the NASA Michoud Assembly Facility on Aug. 30, 2010, paving the way for future tests prior to spaceflight.
- Lean assembly pathfinding operations for the Orion spacecraft were conducted in August and September at the Operations and Checkout Facility at Kennedy Space Center (KSC).
- Propulsion development and testing was completed for Orion's main engine in November.
- In December, the Orion team completed manufacturing of the first Orion spacecraft. Built to spaceflight specifications, this Orion spacecraft will be used for ground and flight test operations to correlate test data with analytical models to validate Orion's flight design engineering to ensure that Orion's structural design can withstand long-duration missions.

2011 look ahead:

- This month, Orion will be shipped to Lockheed's Denver facilities, where it will be integrated with its thermal protection heat shield and back shell prior to testing.
- Orion will begin a series of rigorous ground tests in flight-like environments, which include acoustic and vibration testing in Denver and drop testing at Langley Research Center's water-landing basin.
- Pathfinding operations will continue at the Operations and Checkout Facility at KSC.
- Lockheed Martin's network of avionics labs will support development and verification for the on-orbit and reentry phase flight software.
- The Orion parachutes team and heat shield development team will continue their aggressive test program in support of early flight testing plans.
- Most Orion systems will complete component and subassembly level procurement work in support of early flight testing plans.

NASA/PHOTO SEAN SMITH

As the leaves change, the new hydro impact basin for future Orion water-landing tests takes shape at NASA's Langley Research Center in Hampton, Va.

Commercial Crew and Cargo

On Feb. 1, 2010, President Obama released his plans for Fiscal Year 2011. With that announcement, NASA was given a new direction that includes developing a bold approach to space exploration. The goal: to send the human spaceflight program beyond low-Earth orbit (LEO)—and on to Mars.

This change called for a bold new strategy and new approach to conducting business at Johnson Space Center. Each directorate is on a path toward partnering with industry and saving our valuable assets.

We saw an increase in JSC facilities welcoming external resources and creating partnership opportunities. One of the facilities forging ahead with this strategy is the Neutral Buoyancy Laboratory (NBL).

The NBL provides controlled neutral buoyancy operations to simulate weightless conditions and is a controlled test area with clear water and underwater video and photography. In addition, there is a full audio communications system, a control center, a hyperbaric chamber and overhead cranes capable of moving large, heavy pieces of equipment in and out of the pool.

NASA/PHOTO

Dr. Ellen Ochoa gives her presentation at the Partnership Summit at Rice University.

But these capabilities lie beyond the brick and mortar of the building.

"There are other large swimming pools, but when you pair what this facility brings as far as an institutional capability with our personnel capability and personal services that we deliver, the facility is truly unique," said Raytheon Program Manager Larry Chase.

By investing financial and technical resources, the Commercial Crew and Cargo Program (C3PO) is partnering with two companies, SpaceX and Orbital, which are both working to develop cargo delivery services to the International Space Station. This investment is a revolutionary approach for NASA because it leverages the agency's history and expertise while promoting growth in the private sector. On Dec. 8, 2010, SpaceX launched its Falcon 9 rocket and Dragon spacecraft. This marks the first time a commercial company has successfully recovered a spacecraft reentering from LEO.

Aside from the partnerships formed by the NBL and the investment in the C3PO team, there was also an effort to gather those in the non-aerospace and commercial aerospace community and share with them what JSC has to offer.

Members of the JSC team and representatives of non-aerospace organizations and academia from across the state gathered at Rice University to discuss innovative business partnership opportunities. Hosted by the Texas Workforce Commission, the Greater Houston Partnership and Rice University, the Innovation and Successful Partnerships Summit provided JSC the chance to showcase its unique core capabilities.

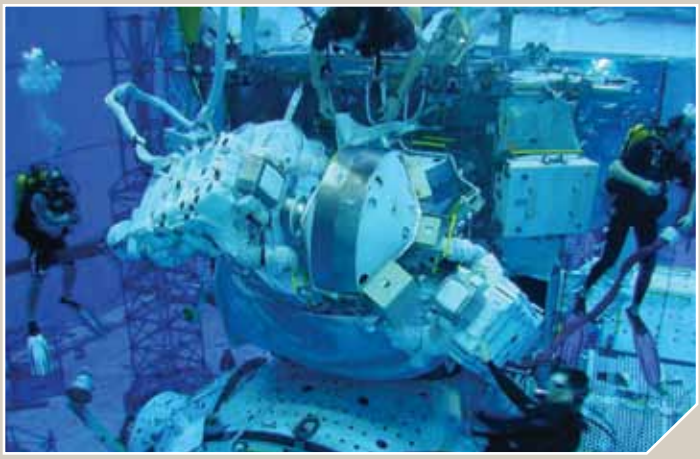
PHOTO/SPACEX

Pictured above is the Falcon 9 and Dragon Spacecraft. The Falcon 9 completed a successful launch and Earth orbit on Dec. 8, 2010.

JSC hosted the American Institute of Aeronautics and Astronautics Symposium at the Gilruth Center. The standing-room-only symposium created an opportunity for those in attendance—it opened a door for a partnership between NASA and the commercial aerospace sector. The hope is to work with companies to build and operate safe, reliable and cost-effective commercial human space transportation systems.

Though there is a difference in the appeal that JSC may create for each audience, the basic message remains the same. That message is, "Let's work together." JSC's goal is to stimulate strategic partnership discussions to advance human spaceflight capabilities and develop technology consumers can benefit from.

Partnerships of this nature are unique, but they count as one step in our race to the future of space exploration.



NASA/PHOTO JSC2007E073774

Divers and astronauts are at work in the NBL. The NBL leadership team has been active in partnering with industry to bring in resources to preserve the facility.

Outreach

Everyone at Johnson Space Center knows how important it is to inspire and educate our communities about the space program. Team members from all areas of JSC reached out in 2010 by traveling to air shows, museums, science centers, universities and sporting events. We were spotted throughout the United States and locations around the world. And, just as in past years, we participated in local annual events like Wings Over Houston, Rodeo Houston and Freedom Over Texas.

Speakers Bureau

NASA explores answers that power our future. JSC employees offer their time and talent through the Speakers Bureau Program to share how NASA's exploration affects you, your children and future generations. In 2010, speakers reached the far corners of the world and traveled to Scotland, Australia, Philippines, Canada, Mexico, California and, of course, Texas.

With topics ranging from aeronautics to the benefits of space exploration, JSC team members offered their unique perspectives to students, teachers, business leaders and the general public during almost 200 presentations.

PHOTO/ASIA SOCIETY OF THE PHILIPPINES

NASA employee Adam Gilmore speaks to a group of children while on a three-week speaking engagement in the Philippines.

Driven to Explore

NASA's Driven to Explore (DTE) exhibit toured through Arizona and New Mexico in early 2010. The mobile, multimedia experience focuses on the Space Shuttle Program, progress of the International Space Station and benefits of space exploration.

PHOTO/NEW MEXICO STATE UNIVERSITY

A group of school kids prepare to explore NASA's Driven to Explore exhibit.

A big draw for DTE is the 3-billion-year-old lunar rock sample that the public can touch and feel.

DTE made its first stop on the Arizona and New Mexico tour at the Tostitos Fiesta Bowl in Glendale, Ariz. After sports fans toured the exhibit, DTE went on to the Yuma Proving Ground Heritage Center in Yuma, the Pima Air and Space Museum in Tucson and the Maricopa County Home Show in Phoenix. The Arizona events were deemed a success, and the exhibit moved on to New Mexico, where the next stop was New Mexico State University in Las Cruces. The exhibit spent more than two weeks in New Mexico making appearances at Santa Fe Children's Museum in Santa Fe, New Mexico Museum of Natural History in Albuquerque, Roswell Museum and Art Center and Goddard Planetarium in Roswell. The final stop was at the New Mexico Museum of Space History in Alamogordo.

PHOTO/SANTA FE CHILDREN'S MUSEUM

The postcard kiosk is one of many interactive features that travels with the Driven to Explore exhibit.

NASA Nights

Sports fans and space fans were given a slew of opportunities to attend a NASA Night in 2010. These special events, sponsored by Houston's sports teams, gave communities a chance to celebrate NASA and our more than 50 years of space exploration accomplishments. The Texans, Astros, Dynamos, Aeros, Rockets and Clear Creek Independent School District all participated in NASA Nights.

NASA/MARKOWITZ JSC2010E047965

The Houston Astros celebrated their 45th anniversary by honoring NASA in their pre-game ceremony.

NASA/BLAIR JSC2010E179357

Creek Football Loves NASA! Communities celebrated the 10th anniversary of human habitation on the International Space Station at the Clear Creek vs. Alvin football game.

Media Moments

Social media innovation

NASA was granted "genius" status in a recent ranking of how public sector organizations engage through social media. On YouTube, Twitter, Facebook and with in-house events, Johnson Space Center is helping show government agencies, industry and advocacy groups how to communicate online. From geography contests from space to providing videos with an insider's view of the agency's operations, JSC is working to push NASA's presence on the Web to new heights.

- JSC held tweetups, or informal gatherings for those who use Twitter, in February, May and November. Welcoming more than 200 people on site, the events gave some of NASA's most influential online fans an insider's look at the center's projects.
- The center held a social media benchmarking workshop to share best practices in social media with other government agencies and to educate JSC leadership and team members about the significance of some of the newest social media innovations on the Web. Speakers included social media mavens from the Houston mayor's office, the U.S. Air Force, the Department of Homeland Security, the Environmental Protection Agency, the American Red Cross and those from within NASA.

NASA/HARNETT JSC2010E185581

Astronaut Clay Anderson shares stories about life in space with November's tweetup guests.

- Timothy (T.J.) Creamer sent the first live tweet from space and held several informal twitterviews, answering questions from the public while on orbit.
- The International Space Station went live on Twitter (@ISS_Research and @ISS_NatLab) and Facebook (International Space Station), helping to expand NASA's social media presence and spread the word about ongoing life, work and research in space.
- Robonaut (@AstroRobonaut on Twitter) began tweeting about life as a robot, amassing more than 18,000 followers in five months.
- Scott Kelly (@StationCDRkelly on Twitter) led a geography contest from space, tweeting photos of various land masses and bodies of water taken aboard station and asking followers to submit the proper names. Kelly also began his lifecasting video series, "Living Off the Grid," from station.
- Well over a dozen "NASA Behind the Scenes" videos, narrated by Mike Massimino, were posted to YouTube, showcasing the people behind the agency's programs.
- Doug Wheelock "checked in" from space on the location-based social media website Foursquare.

More media highlights

PETE SOUZA/THE WHITE HOUSE

President Obama honors Dr. Michael Duncan, psychologist Al Holland, Dr. J.D. Polk and others for their work on behalf of NASA to provide recommendations for the successful rescue of 33 miners trapped more than 2,000 feet below ground near Copiapó, Chile. Dozens of media outlets interviewed the NASA team members about their recommendations.

NASA/PHOTO JSC2010E086521

Comedy Central's Stephen Colbert chats with astronauts Steve Lindsay, Mark Kelly and Dan Tani. Colbert visited JSC after NASA named the space station's new treadmill after him as a consolation prize for winning a competition to name Node 3 of the station.

NASA/PHOTO JSC2010E125382

Shelley Baccus talks to reporters in front of a WB-57 at Ellington Field as part of a media event for the Genesis and Rapid Intensification Processes program, which provides data on hurricanes.

NASA/PHOTO JSC2010E1253723

Space food scientists pose with a dish set to fly to the International Space Station on STS-133. Bravo's "Top Chef" reality TV show featured a NASA-themed challenge in which the winning recipe was prepared by agency team members to be consumed in space.

Education

Employ

Johnson Space Center interns benefit NASA's future

NASA/PHOTO

Tiffany Lewis, JSC intern.

The Office of Higher Education contributes annually to NASA's current and future workforce needs. In 2010, the Higher Education office significantly added to the Johnson Space Center workforce by placing more than 300 interns in engineering, science, administrative and clerical positions, equaling the work of 100 full-time employees. Students were matched to projects in a competitive selection process based on their skills and the needs of the organization.

Also, more than 2,200 students from about 600 unique universities applied to JSC internships, reflecting diversity in education majors, gender and ethnicity. This year, NASA transitioned to a new system—called Student On-Line Application for Recruiting interns, fellows and scholars (SOLAR)—for selecting and placing interns. JSC is accepting student opportunities from mentors, and students are currently applying to those opportunities for the summer. Interested JSC mentors should submit opportunities into the system as soon as possible so they can ensure getting the brightest and most interested students. Visit http://intern.nasa.gov.

Educate

Reduced Gravity Education Flight Program

NASA/PHOTO

The year 2010 saw the Reduced Gravity Education Flight Program celebrate its 15th year of delivering research opportunities to students and educators through parabolic flight. Since its inception, more than 3,000 students representing almost 300 institutions have participated in the robust, hands-on experience.

In addition to serving as a research platform, this program contributes to the nation's technical workforce. Many alumni have transitioned into NASA co-op and intern programs and have gone on to full-time employment at JSC and other centers.

Educate

National Community College Aerospace Scholars

NASA/PHOTO JSC2010E179332

This past year, JSC Education introduced a pilot program called National Community College Aerospace Scholars (NCAS). This program aims to motivate community college students across the nation to study science, technology, engineering and math (STEM) subjects and continue their education at a four-year institution. NCAS received well over 500 applications and brought 171 students on site. The program also expanded to include other NASA centers, specifically Marshall Space Flight Center and the Jet Propulsion Laboratory. Showcasing the success of the program, NCAS alumni are already returning to NASA centers as interns—and many began the fall 2010 semester at four-year universities.

Inspire

Teaching from Space—education downlinks

Students have friends in high places! Through in-flight education downlinks, astronauts on orbit connect live with students. In 2010, 14 U.S. schools and museums took part in high-profile events that involved four Expedition crews, two shuttle crews and more than 40,000 students and teachers.

Highlights included U.S. Secretary of Education Arne Duncan joining Washington, D.C.-area students to speak with crew members during International Education Week, and Shannon Walker connecting to her alma mater, Johnston Middle School, here in Houston.

In-flight education downlinks are a collaborative effort between JSC Education and the Office of Communications and Public Affairs.

NASA/PHOTO

Inspire

Hispanic Engineering, Science and Technology (HESTEC) Week 2010

Celebrating STEM, approximately 50,000 Rio Grande Valley residents participated in HESTEC Community Day. With the backdrop of space exploration, JSC Education and volunteers from the Astromaterials, Engineering and Space and Life Sciences Directorates provided 15 hands-on activities throughout the day. Astronaut Lee Morin presented and signed autographs for future engineers and scientists. Participants captured the memory of the day by having their photo taken with Cosmo, JSC's mascot.

Leading up to the main event, daily HESTEC activities on the University of Texas-Pan American campus included everything from a congressional roundtable reception and dinner to a career day expo.

NASA/JSC EXTERNAL RELATIONS OFFICE

NASA's mission to inspire students to study STEM, as well as to build strategic partnerships to promote STEM literacy, is strengthened in our partnership with HESTEC, which was created nine years ago to address the critical shortage of scientists and engineers in our nation. It has become a national model for promoting STEM careers among students who are predominantly Hispanic.

Engage

NASA/PHOTO JSC2010E110780

Summer of Innovation (SoI)

Through the SoI, JSC worked with partners and educators across Houston and South Texas areas, using the excitement of space to engage middle school students in intensive experiences to improve their academic performance and ultimately strengthen our future workforce. Collaborating with existing as well as new partners, JSC provided content and activities, including volunteers, to support these student summer learning opportunities.

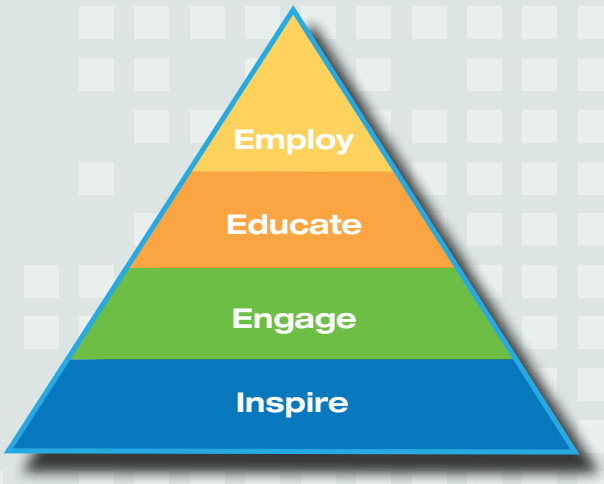
Demonstrating spirit as only NASA can, the JSC team stepped up to provide classroom speakers and panel members to share NASA-related topics, assisting at large outreach events and providing tours. The challenge given to each center was to reach 1,000 middle school students, who would each complete a minimum of 40 STEM-content hours (with 25 percent being NASA content). JSC not only met the challenge, but surpassed the overarching goal of reaching larger audiences with events such as Voyage Back to School at Space Center Houston and HESTEC.

Engage

NASA High School Aerospace Scholars (NHAS)

PHOTO/ VIRGINIA SPACE GRANT

Using the model of Texas High School Aerospace Scholars (HAS), JSC led the way to provide NASA High School Aerospace Scholars (NHAS) nationally. Sharing our expertise, JSC partnered with other states to provide the Texas model. Not only does the program offer a robust learning experience for students, it also links participants with their state legislators to show the benefits of space exploration and research in their states. Currently JSC has agreements with the states of Idaho, Virginia, Washington and West Virginia, and discussions are in progress with several others.



Around the Center

Space rocks


NASA/PHOTO JSC2010E006767

A moon rock collected during the historic Apollo 11 mission found a new residence aboard the International Space Station, alongside a piece of Mt. Everest, in March 2010.

During his second attempt to reach the highest point on Earth's continental crust, former astronaut Scott Parazynski successfully carried the moon rock with him to the summit of Mt. Everest.

On Jan. 6, 2010, Parazynski presented both rocks to STS-130 Commander George Zamka during a special ceremony. Zamka delivered the rocks to the space station aboard Space Shuttle *Endeavour*, where they currently reside in the Tranquility module.

Apollo 13 40th anniversary


NASA/PHOTO JSC2010E049865

On April 6, 2010, Johnson Space Center celebrated the historic milestone of the Apollo 13 40th anniversary. Activities included a storytelling event moderated by Jeff Kluger from TIME magazine in the Teague Auditorium and featured Apollo veterans Jim Lovell, Fred Haise, Gene Kranz, Gerry Griffin, Glynn Lunney and John Aaron. Also part of the day was an open house in historic Mission Control Center and an Apollo 13 celebration at the Gilruth Center.

Innovation 2010


NASA/PHOTO JSC2010E061561

Innovation 2010 on April 28, 2010, was a first-of-its-kind stand-down day that emphasized the importance of innovation in all aspects of our business.

This internal event featured more than 130 technical innovations and process improvements, and took place on the JSC mall area and surrounding buildings. Exhibits ranged from "Adapting NASA Aircraft for Present and Future Missions" to "The STS-130 Tweetup Social Media Success Story."

Save the date!

Innovation 2011, sponsored by the JSC Inclusion and Innovation Council, is scheduled for April 20. It will be held again on the JSC mall and surrounding areas. Look for some great guest speakers, exhibits, rap forums and a free lunch on the mall.

Telling our stories

NASA/PHOTO JSC2010E042044

Some storytelling events of 2010 included:

- **January** - Dennis Fitch, United Airlines Emergency Overview; and Capt. Sully Sullenberger with US Airways Flight 1549
- **March** - A Six-Pack of Wisdom from 5 Engineers + 1 Astronaut; and Wisdom and Lessons Learned From the JSC Propulsion and Power Division
- **April** - Telling the Stories of Apollo: A Conversation With Apollo Alumni
- **May** - Sustaining NASA Human Flight: Beyond Dogma and Jobs, Beyond Outreach
- **June** - Building the International Space Station: Pushing the Frontiers
- **September** - Lessons Learned From *Columbia*

The Office of the Chief Knowledge Officer is always seeking new storytellers. If you are interested in telling a story about a JSC experience, visit http://knowledge.jsc.nasa.gov/ to find out more.

Sharing is caring ...


NASA/PHOTO

Throughout November, JSC team members, Space Center Houston Volunteers and Help Our Military Endure (HOME) collected donations for care packages to be sent to deployed troops, and Clear Creek Independent School District students wrote letters. On Dec. 2, 2010, they came together to pack the boxes and prepare them for mailing. It was a true team effort, and thanks to everyone involved, 680 boxes were packed and more than 3,000 letters were written.

Bring Our Children to Work Day


NASA/PHOTO JSC2010E092094

The Education Outreach team welcomed all JSC team members to join in a fun-filled day of "edutainment" at JSC's Bring Our Children to Work Day on June 11, 2010. Children participated in hands-on activities, spent time talking up close and personal with NASA scientists and engineers, launched indoor rockets, visited a planetarium and even had their photo taken next to the Flexible Range Exploration Device (FRED, formerly known as the LER). Crew members from STS-131 took the stage to share mission highlights and answer questions. The day also included special viewing hours in the Mission Control Center, Neutral Buoyancy Laboratory and Building 9.

Innovation and Partnerships

NASA/BLAIR JSC2010E061558

JSC team members check out a booth during Innovation 2010.

NASA/BLAIR JSC2010e188833

Participants arrive at the TEDx Youth event at Space Center Houston.

NASA and Johnson Space Center continue to cook up inventive ideas to tap into science expertise in other fields, educate and excite the next generation of imaginative thinkers and collaborate with industry technology leaders.

■ JSC participated in the Innovation and Successful Partnerships Summit hosted by the Texas Workforce Commission, the Greater Houston Partnership and Rice University. The summit gave non-aerospace organizations the opportunity to explore potential partnerships with JSC to collaborate and build upon information about technology.

■ NASA launched the Human Health and Performance Center, a virtual forum for government agencies, academic institutions, industry and non-profit organizations from around the world to collaborate on projects that advance human health and performance innovations. Space Life Sciences also selected three winning solutions to problems affecting astronaut health and performance through an open innovation competition in the NASA Innovation Pavilion on www.InnoCentive.com that seeks inventive contributions from a vast network of problem solvers.

■ Buildings 2 and 266 received gold certifications, and Building 20 received platinum certification, from the U.S. Green Building Council's Leadership in Energy and Environmental Design for reducing air leakage, selecting efficient lighting systems, using low-emitting and recycled material and a host of other green building practices. The center continues to work to improve its environmental impact through responsible building.

■ The Inclusion and Innovation Council organized Innovation 2010 at JSC to emphasize the significance of innovative thinking at the center. At the event, team members shared creative and imaginative projects and participated in team-building activities.

■ Held at the Gilruth Center in October, the Commercial Human Space Symposium promoted collaboration between organizations interested in exploring commercial crew and cargo transportation. Through demonstrations and discussions at the event, JSC provided insights into unique aspects of human spaceflight, and private companies were given the opportunity to vocalize how JSC can support their efforts.

■ JSC hosted a TEDx Youth Day Event at Space Center Houston for 200 junior and senior high school students as a part of the International Youth Day 24-hour series of events designed to empower and inspire young people. It included a diversity of speakers from the fields of engineering, science, film and the arts and featured more than a dozen exhibits.

NASA/STAFFORD JSC2010E123758

JSC Director Mike Coats speaks with Dr. Wade Adams and Tom Pauken at the Innovation and Successful Partnerships Summit.

■ The center continued to build upon partnerships with industry leaders. NASA has maintained a relationship with GM since the 1960s and continues to work closely to refine the most recent iteration of a humanoid robot, Robonaut 2. The agency also established a collaborative relationship with Chrysler to investigate the use of automotive and wireless technologies and mobility systems in space.

Missions


NASA/PHOTO 201002170001HQ

FEB. 17, 2010:
U.S. President Barack Obama, accompanied by members of Congress and middle school pupils, waves as he talks on the phone from the Roosevelt Room of the White House to astronauts on the International Space Station.

APRIL 5, 2010:
STS-131 rockets to space to begin a mission that encountered many challenges, like a data communications system that failed once in orbit, a malfunctioning nitrogen tank assembly valve and replacing a depleted ammonia tank on station—among other tasks.

MAY 16, 2010:
STS-132 meets up with the orbiting laboratory to install new equipment and spares for station during three spacewalks.

DEC. 22, 2009:
Three new Expedition 22 members welcomed aboard the International Space Station (NASA astronaut T.J. Creamer, Russian cosmonaut Oleg Kotov and Japanese Aerospace Agency astronaut Soichi Noguchi).

FEB. 8, 2010:
Space Shuttle *Endeavour* races to space to deliver two new space station pieces, the final components of the U.S. segment of station, as part of STS-130.

APRIL 2, 2010:
Expedition 23 crew launches from Kazakhstan: NASA astronaut Tracy Caldwell Dyson and Russian cosmonauts Alexander Skvortsov and Mikhail Kornienko.


NASA/PHOTO S131E008710

APRIL 11, 2010:
Mission Specialists Rick Mastracchio (left) and Clayton Anderson participate in STS-131's second spacewalk.

DEC 2009 | JAN 2010 | FEB 2010 | MAR 2010 | APR 2010 | MAY 2010 | JUNE

FEB. 19, 2010:
STS-130 Commander George Zamka is pictured in a window of the newly installed cupola of the station while *Endeavour* remains docked to it.


NASA/PHOTO ISS022E068723

FEB. 21, 2010:
2010: *Endeavour* returns to her home planet.

MARCH 18, 2010:
Soyuz TMA-16 spacecraft lands to cap off milestone space station mission (Expedition 22) that supported two shuttle flights and helped install the Tranquility module, cupola viewing port and second Russian docking module.


NASA/PHOTO 201003180001HQ

APRIL 7, 2010:
The joining of station and shuttle crews marks the first time four women are in space at the same time.


NASA/PHOTO S131E007752

APRIL 20, 2010:
A break in unstable weather at Kennedy Space Center allows Space Shuttle *Discovery* to finally come home.

MAY 14, 2010:
Atlantis thunders away from Earth during her last, bittersweet launch.

MAY 26, 2010:
Atlantis touches down at Kennedy Space Center.


NASA/PHOTO STS132-S-135

The Crews


NASA/PHOTO ISS022-S-002A

EXPEDITION 22


NASA/PHOTO ISS023-S-002B

EXPEDITION 23


NASA/PHOTO ISS024-S-002A

EXPEDITION 24


NASA/PHOTO ISS025-S-002A

EXPEDITION 25

NASA/PHOTO 20100616004HQ

JUNE 15, 2010:
Three new Expedition 24 crew members (NASA astronauts Doug Wheelock and Shannon Walker and Russian cosmonaut Fyodor Yurchikhin) lift off from Baikonur Cosmodrome to meet up with the rest of the crew.

NASA/PHOTO JSC2010E115049

AUG. 11, 2010:
Flight Director Courtenay R. McMillan watches the big screens in the space station flight control room in Johnson Space Center's Mission Control Center during the second of three spacewalks performed by Expedition 24 Flight Engineers Wheelock and Dyson.

NOV. 2, 2010:
Celebrate good times—the 10-year anniversary of continuous human life, work and research by international crews since Nov. 2, 2000.

OCT. 7, 2010:
Expedition 25 anticipates three new station residents with the Soyuz TMA-01M launch (NASA astronaut Scott Kelly and Russian cosmonauts Oleg Skripochka and Alexander Kaleri).

NASA/PHOTO 20101213000HQ

DEC. 13, 2010:
The Soyuz TMA-20 spacecraft is rolled out by train on its way to the launch pad at the Baikonur Cosmodrome.

2010 | JULY 2010 | AUG 2010 | SEPT 2010 | OCT 2010 | NOV 2010 | DEC 2010

JUNE 1, 2010:
Expedition 23 hitches a ride back on a Soyuz TMA-17 spacecraft, ending a mission that supported three shuttle flights, put the finishing touches on U.S. laboratory research facilities and attached the Russian Rassvet laboratory and storage module.

SEPT. 25, 2010:
Expedition 24 wraps up a six-month stay aboard station, where Dyson and Wheelock conducted three spacewalks to replace a faulty cooling pump module on the truss structure and Kornienko participated in one to perform assembly work on the Russian segment.

OCT. 18, 2010:
Expedition 25 Flight Engineer Walker works with the Hydrotropism and Auxin-Inducible Gene Expression in Roots Grown under Microgravity Conditions experiment in the Kibo laboratory of station.

NASA/PHOTO ISS025E007780

NOV. 26, 2010:
Expedition 25 safely lands on the Kazakhstan steppe, wrapping up a mission that carried out three unplanned spacewalks after an emergency shutdown of half of the station's external cooling system and supported more than 120 microgravity experiments.

DEC. 17, 2010:
Expedition 26 unites as a crew as the Soyuz TMA-20 docks with station, welcoming NASA astronaut Catherine Coleman, Russian cosmonaut Dmitry Kondratyev and Paolo Nespoli of the European Space Agency to the space outpost.

NASA/PHOTO ISS026-S-002

EXPEDITION 26

NASA/PHOTO STS130-S-002

STS-130

NASA/PHOTO STS131-S-002

STS-131

NASA/PHOTO STS132-S-002

STS-132

Recovery Act

The American Recovery and Reinvestment Act (ARRA) funded $284 million worth of activities at Johnson Space Center during the past 18 months. More than 90 percent of these efforts were wrapped up during calendar year 2010. Highlights include the following:

- $166 million was used to promote design, development and testing of Orion systems. These funds enabled better understanding of next-generation technologies that can be applied to future human-operated spacecraft. It also aided us in learning more about the limitations surrounding astronaut safety and mission success.
- $50 million was invested via new Space Act Agreements with five commercial partners to stimulate commercial crew capabilities. By year end, more than 90 percent of the milestones were achieved. An additional $1 million was dedicated to the creation of a consolidated set of requirements and standards for NASA human-rating certifications for space systems.
- The International Space Station Program used $15 million to accelerate the development of a common docking adapter, which creates a universal method for attaching to the space station. This effort guided the station's government/industry team progress toward developing the next generation of advanced docking systems for human spaceflight.
- JSC received $2.5 million from the Science Mission Directorate's Airborne Science Program. This funding is being used to build out-of-inventory spare parts needed to keep our venerable WB-57 aircraft soaring the skies and supplying key Earth science data.
- The most visible ARRA activities were the construction projects associated with the $50 million Hurricane Ike Phase II repair program. More than 50 buildings received repairs consisting of replacing roofs, repairing loggia ledges, re-caulking and waterproofing building panels, rebuilding a hangar, replacing about 100 lights and poles, replacing nearly 2,400 windows in Building 1, safing the barge dock and replacing damaged carpet. All this was accomplished without a safety incident. Additionally, the repairs provided significant sustainability benefits.

NASA/PHOTO JSC2010E103407

The WB-57 aileron project and team members.

New agencywide Emergency Notification and Accountability System

NASA is implementing a new agencywide Emergency Notification and Accountability System (ENS). JSC has an established ENS team that includes personnel from Human Resources, Information Technology, Office of Emergency Management and the Office of Communications and Public Affairs. Employees will be contacted with a phone call, e-mail or text message if an emergency happens, and will be expected to carefully read messages and follow directions to account for their safety.

Emergency notifications will come to work phones (caller IDs will display NASA Emergency with a 615 area code) and to e-mail (from Emergency.NASA@dccnotify.com). Team members may be asked to send short replies or go online to an ENS website to indicate receiving a message. Some messages will ask employees to go to a website to check in by responding "yes" or "no" to an "Are you okay?" message. Employees should be aware that answering "no" to emergency communications inquiring into their safety is not the same as dialing 911. The message will also give an option to record a current phone number where you may be reached.

The new system will streamline information sharing and employee accountability.

"We've experienced various emergency situations here at JSC, Hurricane Ike (being) the most recent widespread emergency," said Sylvia Stottlemyer, an ENS accountability point of contact. "It is a priority of our agency and center management to inform our employees of emergency situations and to inquire about their safety.

"The change was sparked when the agency determined that a one-system capability was more effective and cost efficient for all of the centers, rather than various systems being used to serve these functions."

To receive information outside of business hours, team members will need to submit their personal contact information. Civil servants can visit Employee Express at http://www.employeeexpress.gov to update their information. Contractors can do so through the Identity Management and Account Exchange, more commonly known as idMAX, at: https://idmax.nasa.gov

More information can be found on the ENS website: **http://www.hq.nasa.gov/office/ops/nasaonly/ENSinformation.html**

NASA PROTECTIVE SERVICES

Statistics

NASA Johnson Space Center Economic Impact in Texas | **Fiscal Year 2010 (FY10)**

While Johnson Space Center has earned a global reputation for achievements in space exploration, less evident are the economic benefits the institution brings locally and to the state of Texas. JSC's role is a vital part of regional and state economies. Here are some highlights:

PROGRAM	OBLIGATIONS ($B)	OBLIGATIONS %
Space Shuttle	2.01	31%
International Space Station	1.99	31%
Exploration	1.74	27%
Cross-Agency Supt. (Inc. Institution)	0.52	8%
Other	0.22	3%
Total	6.48	100%

Local and State Level Economic Benefits

- JSC had nearly $5.3 billion in FY10 Procurement obligations.
- 85 large businesses performed portions of the contracts, totaling about $3.6 billion in Texas.
- Nearly $119 million went to small businesses working in Texas.
- JSC obligated nearly $14.2 million on grants, contracts and agreements with Texas universities and Texas education institutions in FY10.
- JSC did almost $70.4 million in business with women-owned businesses in Texas in FY10.
- Nearly $10.3 million was spent on contracts performed in Texas by veteran-owned businesses.
- Nearly $14.5 million of JSC funding in FY10 was obligated on grants, contracts and agreements with non-profit organizations in Texas.

JSC and White Sands Test Facility Civil Service Workforce by Communities FY10

COMMUNITIES	HEADCOUNT	SALARY ($M)
CLEAR LAKE AREA TOTAL	**2,496**	**289.1**
Bacliff/Kemah/San Leon	43	4.4
Clear Lake	959	114.9
Dickinson	66	6.7
Friendswood	366	45.4
LaPorte/Shoreacres	21	2.0
League City	700	76.7
Seabrook/El Lago/Taylor Lake	262	31.2
Webster	79	7.8
HOUSTON REGION	**831**	**85.1**
Houston (except Clear Lake)	364	36.1
Alvin	42	4.5
Deer Park	19	1.6
Pasadena	171	3.1
Pearland	166	19.4
Brazoria County	28	2.9
Fort Bend County	52	5.4
Other Harris County Areas	56	5.0
Other Harris County Areas	66	7.1
Houston Region Total (including Clear Lake Area)	**3,327**	**374.2**
Other Areas of Texas Total	**52**	**2.6**
Outside of Texas Total*	**222**	**13.3**
GRAND TOTAL	**3,601**	**390.1**

Note: The headcount includes any individual that received salary payments via the Federal Personnel and Payroll System during FY10. These salary payments include base pay plus the locality differential, overtime, and awards. Income numbers are rounded.

** The "outside of Texas" value includes White Sands Test Facility.*

Roundup

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Catherine Ragin Williams Editor
Neesha Hosein Assistant Editor
Logan Goodson Graphic Design
Rachel Kraft NASA Publication Manager
Cassandra V. Miranda Contractor Publication Manager

NASA Strategic Plan

Every year in February, the president submits his budget request for the federal government to Congress. This year, along with the president's budget request for NASA, we will be submitting our new NASA Strategic Plan, which guides the work we will perform.

The NASA Strategic Plan outlines our long-term goals as an agency and describes how we will accomplish those goals through the outcomes that support each goal over the next decade or more.

Our goals are just that—our goals. And they are cross cutting, with multiple centers, mission directorates and mission support offices contributing to the success of each. We are all responsible for ensuring that these agency goals are met. I expect you to focus on the new mission, vision and goals starting now and going forward. Our mission, vision and goals are who we are as an agency and should encompass all we do.

This is an exciting time for NASA and we have a solid way forward. Working together, we will continue to make NASA's future better and brighter as we contribute to the welfare of our nation.

Charlie Bolden
NASA Administrator

Vision: *NASA leads scientific and technological advances in aeronautics and space for a nation on the frontier of discovery.*

Mission: *Drive advances in science, technology and exploration to enhance knowledge, education, innovation, economic vitality and stewardship of the Earth.*

Goal 1: Extend and sustain human activities across the solar system.

Goal 2: Expand scientific understanding of the Earth and the universe in which we live.

Goal 3: Create the innovative new space technologies for our exploration, science and economic future.

Goal 4: Advance aeronautics research for societal benefit.

Goal 5: Enable program and institutional capabilities to conduct NASA's aeronautics and space activities.

Goal 6: Share NASA with the public, educators and students to provide opportunities to participate in our mission, foster innovation and contribute to a strong national economy.